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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/068,270 05/04/98 UCHIYAMA

K 93195-000062

EXAMINER

MMC2/0705

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MITCHELL, I

ART UNIT

PAPER NUMBER

2822

DATE MAILED:

07/05/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/068,270

Applicant(s)

UCHIYAMA, KENJI

Examiner

James Mitchell

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 04 May 1998.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-4, 7-14 and 17 is/are rejected.
- 7) ☐ Claim(s) 5, 6, 15 and 16 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

**DETAILED ACTION**

1. This office action is in response to the preliminary amendment filed May 4, 1998.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5,6,15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is indefinite as to applicant's claimed rate of space. Is claimed "5% to 70% and 10% to 50%" rate, a proportionality of space to bond layer or does applicant claim that the amount of space within the bond layer can vary between given percentages? Applicant needs to clarify.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki (2133936).
5. Yamazaki discloses semiconductor device (1), substrate (2), bonding layer (6), spaces (7) formed closely between bumps (8), and dispersal of internal stress.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-4, 7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki as applied to claim 1 and further in view of Muramatsu (U.S. 5,893,623).
8. Yamazaki does not disclose plurality of bumps arranged in rows or an epoxy based bond layer.
9. However, Muramatsu utilizes an epoxy based adhesive (Lines 60-61, Column 7).
10. It would have been obvious to one of ordinary skill in the art to use an epoxy based bonding layer within a semiconductor device in order to increase moisture resistance (Lines 61-62, Column 7).
11. It would have also been obvious to one of ordinary skill as well known in the art to form rows of bumps on the semiconductor chip for cost efficiency and increased electrical contact.
12. In regards to claims 3, 4 and 9, a method of making characteristic is given no patentable weight in determining patentability of the final device structure. Note that a "product by process" claim is directed to the product per se, no matter how actually made. *In re Thorpe*, 227 USPQ 964. Case law makes it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, not the patentability of the process, and that an old or obvious product produced by a new method is not a patentable product, whether claimed in "product by process" or not.

13. Claims 11-14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (APA) in view of Yamazaki.

14. APA discloses a LCD connected between two substrates (Page 2, Paragraph 1), semiconductor connected to substrate (Page 2, Paragraph 3) with anisotropic conductive film bonding layer (Page 2, Paragraph 2) for a Liquid Crystal Display.

15. The disclosed prior art does not show a space formed within a bonding layer, however Yamazaki utilizes space between bond layer (abstract).

16. It would have been obvious to one of ordinary skill in the art to form spaces within bond layer in order to disperse internal stress (Abstract).

17. In regards to claims 12, to form bumps on a semiconductor device would have been obvious to one of ordinary skill as well known in the art to form electrical connection through conductive film.

18. In regards to claim 13 and 14, see paragraph 12 on "product by process".

### **Conclusion**

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Culnane et al. (U.S 5,973,389), Nishikawa et al. (U.S 5,907,375), Uchiyama (U.S 5,847,796), Song et al. (U.S. 5,444,301), Takeshi (EP 0517071).

The prior art discloses ref.1 porous adhesive attached to semiconductor device, ref.2 LCD with ACF, ref. 3 Epoxy bonding layer for semiconductor device, ref. 4 Epoxy adhesive being used for conventional packaging and ref. 5 spaces formed within adhesive due to heat and pressure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (703) 308-4083. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

jmm  
June 16, 2001

  
**CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800**